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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,855	07/14/2003	Dong-Ryeol Lee	1293.1839	3801

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EXAMINER

GOMA, TAWFIK A

ART UNIT	PAPER NUMBER
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2627

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/617,855	Applicant(s) LEE ET AL.	
	Examiner Tawfik Goma	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6-9,11,12,17-20,22-25 and 28-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6-9,11,12,17-20,22-25 and 28-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to the RCE filed on 10/10/2006.

Claim Objections

Claim 1 is objected to because of the following informalities: Claim 1 recites “the light emitted *form* the ...” The word form should likely read ‘from’. Appropriate correction is required.

Claim 31, is objected to because of the following informalities: Claim 31 recites “light passing *though* the optical element and the collimating lens. The word though in the claim should likely be ‘through.’ Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6, 9, 11, 12, 17, 20, 22-25, 29 and 30 are rejected under 35 U.S.C. 103(a) as being obvious over Kim (US 2002/0136132) in view of Oohchida et al (US 6584060).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter

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disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Regarding claims 1, 12, and 23, Kim discloses an optical pickup of an optical disc for a recording/reproducing apparatus (fig. 3), comprising: a light source emitting a light (102, 103, fig. 3); an objective lens (130, fig. 3) focusing the light emitted from the light source and irradiating the light on the optical disc (135, fig. 3); a hologram optical element (105, fig. 3) adjusting a convergence and/or a divergence of the light and proceeding to the objective lens, a collimating lens to convert the light emitted from the light source into parallel light after passing through the collimating lens and the optical element (125, fig. 3) and wherein the hologram optical element is adjusted along an optical axis to adjust the convergence and/or divergence of the light emitted from the light source during assembly of the optical pickup (fig. 4 and par. 31). Kim fails to disclose wherein the collimating lens has a focal length within a range of 0 to less than 11 mm. In the same field of endeavor, Oohchida discloses an optical pickup with a collimator lens whose focal length is 10 mm (col. 9 lines 26-35). It would have been obvious to one of ordinary skill in the art to modify the pickup disclosed by Kim by providing a collimating lens with a focal length of 10 mm as taught by Oohchida. The rationale is as

follows: One of ordinary skill in the art would have been motivated to provide a collimating lens with a focal length of 10 mm in order to increase the optical efficiency of the pickup.

Regarding claims 6, 17 and 27, Kim further discloses wherein the optical element (105, fig. 3) is disposed between the light source (102, 103, fig. 3) and the collimating lens (125, fig. 3).

Regarding claims 9, 11, 20, and 22, Kim further discloses wherein the light source comprises a plurality of light sources to emit light having different wavelengths and the optical element adjusts the convergence/divergence of the light emitted from at least one of the plurality of light sources so that the optical pickup is compatible for a plurality of optical recording media having different formats (102, 103, fig. 3 and par. 23).

Regarding claim 24, Kim further discloses wherein the light source comprises an edge emitting laser or a vertical cavity surface-emitting laser to emit the light having a predetermined wavelength (102, 103, fig. 3).

Regarding claim 25, Kim further discloses wherein the collimating lens is disposed between the optical path changing device and the objective lens (125, fig. 3), so that the collimating lens focuses the divergent light emitted from the light source and makes the light into parallel light.

Regarding claim 29, Kim '132 discloses an optical path changing unit (115, fig. 3) and wherein the optical element is placed between the light source and the path changing unit (105, fig. 3), but fails to disclose wherein the collimating lens is placed between the light source and the optical path changing unit. Oohchida discloses an optical path changing unit wherein the collimating lens (2, fig. 2A) is placed between the light source and the optical path changing unit

(11, 63, fig. 1a). It would have been obvious to one of ordinary skill in the art to modify the pickup disclosed by Kim '132 by providing a collimator lens between the light source and the path changing unit as taught by Oohchida. The rationale is as follows: One of ordinary skill in the art at the time of the applicant's invention would have been motivated to provide a collimator lens between the light source and the path changing unit in order to increase the efficiency of the pickup by making the light parallel prior to entering the path changing unit such that less light is lost as stray light.

Regarding claim 30, Kim '132 further discloses wherein the optical path changing unit is a plate beam splitter (115, fig. 3 and par. 23).

Claims 7, 8, 18, 19, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 2002/0136132) in view of Oohchida et al (US 6584060) as applied to claims 1, 6, 9, 11, 12, 17, 20, 22-25 and 29-30 above and further in view of Takahashi (US 6301216).

Regarding claims 7, 8, 18, 19, Kim '132 in view of Oohchida fail to disclose wherein a beam-shaping device is between the collimating lens and the objective lens. In the same field of endeavor, Takahashi discloses a beam shaping device (31, fig. 5) which is placed between a collimator lens (35, fig. 5) and an objective lens (38, fig. 5). It would have been obvious to one of ordinary skill in the art to modify the beam shaping device disclosed by Kim '132 by placing it between a collimator lens and an objective lens as taught by Takahashi. The rationale is as follows: One of ordinary skill in the art at the time of the applicant's invention would have been motivated to provide the beam shaping device between the collimating lens and the objective

lens in order to shape light of different wavelengths to converge onto the disc after it has been made parallel by the collimating lens, increasing the efficiency of the optical pickup.

Regarding claim 31, Takahashi discloses the beam shaping device is disposed on an optical path of the light converted into parallel light after passing through an optical element (48, fig. 4) and collimating lens (35, fig. 4). The rationale follows as applied to claims 7, 8, 18, and 19 above.

Regarding claim 32, Takahashi further discloses wherein the collimating lens and the beam shaping device (13, fig. 6) are disposed between the light source (21, fig. 6) and the beam splitter (14, fig. 6) so that the light reflected from the optical disc and passing through the plate beam splitter becomes the parallel light in a beam shaping state. The rationale follows as above.

Claims 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 2002/0136132) in view of Oohchida et al (US 6584060) as applied to claims 1, 6, 9, 11, 12, 17, 20, 22-25 and 29-30 above and further in view of Kim (US 6337841).

Regarding claim 28, Kim '132 in view of Oohchida discloses everything claimed as applied above. Kim '132 further discloses wherein the laser source emits a wavelength of 655 nm (par. 23) for a DVD type disc. Kim '132 fails to disclose the numerical aperture of the objective lens. In the same field of endeavor, Kim '841 discloses wherein the objective lens has a numerical aperture of 0.6 (col. 5 lines 58-60). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to use a numerical aperture of 0.6 as it was a common numerical aperture of an objective lens used during DVD recording in order to decrease the spot size and increase the recording density.

Claims 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 2002/0136132) in view of Oohchida et al (US 6584060) in view of Takahashi (US 6301216) as applied to claims 7, 8, 18, 19, 31 and 32 above and further considered with Kim (US 6337841).

Regarding claim 33, Kim '132 discloses a grating (110, fig. 3), but fails to disclose wherein the grating is used for a three beam tracking method. In the same field of endeavor, Kim '841 discloses a grating splitting the light emitted from the light source into at least three light beams to detect a tracking an error signal using a three-beam method (col. 8 lines 10-14). It would have been obvious to one of ordinary skill in the art to modify the device disclosed by Kim '132 by providing a grating for a three beam method as taught by Kim '841. The rationale is as follows: One of ordinary skill in the art at the time of the applicant's invention would have been motivated to use a grating for a three beam tracking method in order to improve the detection of the tracking error signal.

Regarding claim 34, Kim '132, Oohchida, and Takahashi fail to disclose wherein the beam shaping device and the collimating lens are disposed between the beam splitter and the objective lens. Kim '841, discloses an beam shaping device (135, fig. 3), and collimating lens (133, fig. 3) disposed between a beam splitter (131, fig. 3) and an objective lens (137, fig. 3). It would have been obvious to one of ordinary skill in the art to place the beam shaping element and the collimating lens between the beam splitter and the objective lens. The rationale is as follows: One of ordinary skill in the art would have been motivated to provide the beam shaping device and the collimating lens between the beam splitter and the objective lens in order to shape and collimate the light that is reflected from the disc as well as the light that is made incident on

the disc, increasing the optical efficiency of the pickup since stray light caused by the reflection off of the disc will be shaped and made parallel.

Regarding claim 35, Kim '132 further discloses a photo detector (145, fig. 3) and a lens for removing aberration (140, fig. 3) disposed in front of the photo detector with an inclination opposite that of the plate beam splitter (fig. 3).

Regarding claim 36, Kim '132 discloses wherein the optical element and the grating are installed separately (105, 110, fig. 3).

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 2002/0136132) in view of Oohchida et al (US 6584060) in view of Takahashi (US 6301216) and further in view of Kim (US 6337841) as applied to claims 33-36 above and further considered with Tajiri (US 6072607).

Regarding claim 37, Tajiri discloses wherein a grating and an holographic optical element are formed in one united body (7, 60, fig. 16). It would have been obvious to modify form the grating (Kim '132, 110, fig. 3) and the optical element (Kim '132, 105, fig. 3) in one united body. The rationale is as follows: One of ordinary skill in the art at the time of the applicant's invention would have been motivated to make the diffraction grating and the optical element in a united body in order to ensure that no displacement occurs between the grating and the optical element due to disturbances to the pickup.

Claims 1, 6, 7, 8, 9, 11, 12, 17, 18, 19, 20, and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (US 2001/0043522) in view of Oohchida et al (US 6584060).

Regarding claims 1, 12, and 23, park discloses an optical pickup of an optical disc for a recording/reproducing apparatus (fig. 2), comprising: a light source emitting a light (11, fig. 2); an objective lens (15, fig. 2) focusing the light emitted from the light source and irradiating the light on the optical disc (D1, D2, fig. 2) a collimating lens (14, fig. 2) to convert the light emitted from the light source into parallel light after passing through the collimating lens and the optical element; and a hologram optical element (12, fig. 2) adjusting a convergence and/or a divergence of the light and proceeding to the objective lens, and wherein the hologram optical element is adjusted along an optical axis to adjust the convergence and/or divergence of the light emitted from the light source during assembly of the optical pickup (fig. 2 and par. 33). Park fails to disclose the focal length of the collimating lens. In the same field of endeavor, Oohchida discloses an optical pickup with a collimator lens who's focal length is 10 mm (col. 9 lines 26-35). It would have been obvious to one of ordinary skill in the art to modify the pickup disclosed by Park by providing a collimating lens with a focal length of 10 mm as taught by Oohchida. The rationale is as follows: One of ordinary skill in the art would have been motivated to provide a collimating lens with a focal length of 10 mm in order to increase the optical efficiency of the pickup.

Regarding claims 6, 17 and 27, Park further discloses wherein the optical element (12, fig. 2) is disposed between the light source and the collimating lens (15, fig. 2).

Regarding claims 7, 8, 18, and 19 Park further discloses wherein the optical pickup further comprises a beam shaping device disposed between the collimating lens and the objective lens to shape the light (16, fig. 2).

Regarding claims 9, 11, 20, and 22, Park further discloses wherein the light source comprises a plurality of light sources to emit light having different wavelengths and the optical element adjusts the convergence/divergence of the light emitted from at least one of the plurality of light sources so that the optical pickup is compatible for a plurality of optical recording media having different formats (11a, 11b, fig. 2 and par. 27).

Regarding claim 24, Park further discloses wherein the light source comprises an edge emitting laser or a vertical cavity surface-emitting laser to emit the light having a predetermined wavelength (11a, 11b, fig. 2).

Regarding claim 25, Park further discloses wherein the collimating lens is disposed between the optical path changing device and the objective lens (14, fig. 3), so that the collimating lens focuses the divergent light emitted from the light source and makes the light into parallel light.

Claims 28, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (US 2001/0043522) in view of Oohchida (US 6584060) as applied to claims 1, 6, 7, 8, 9, 11, 12, 17, 18, 19, 20, and 22-25 above and further in view of Kim (US Patent 6337841).

Regarding claim 28, Park in view of Oohchida disclose everything claimed as applied above. Park further discloses wherein the laser source emits a wavelength of 655 nm (par. 27) for a DVD type disc. Park fails to disclose the numerical aperture of the objective lens. In the same field of endeavor, Kim '841 discloses wherein the objective lens has a numerical aperture of 0.6 (col. 5 lines 58-60). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to use a numerical aperture of 0.6 as it was a common numerical aperture of an objective lens used during DVD recording.

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Regarding claim 30, Kim '841 further discloses wherein the optical path-changing device comprises a plate beam splitter (231, fig. 11). It would have been obvious to use a plate beam splitter as an alternative to a quad-beam splitter disclosed by Park as it is well known in the art.

Regarding claim 31, Park further discloses a beam shaping element disposed on a path of the light after passing through the collimating lens and the optical element (16, fig. 2).

Response to Arguments

Applicant's arguments with respect to claims 1, 6-9, 11-12, 17-20, 22-25, and 28-37 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

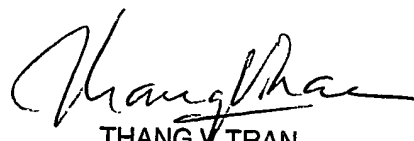
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tawfik Goma whose telephone number is (571) 272-4206. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


T. Goma
12/28/2006


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